Method, modules and program modules for synchronization

Claims

1. A method for synchronization of a first and at least a second module, each having a clock generator, the method comprising the steps of

- transmitting by the first module, a first clock signal generated by its clock generator to the at least one second module,
- synchronizing the clock generator of the at least one second module with the first clock signal,
- transmitting by the at least one second module a second clock signal generated by the clock generator that is synchronized with the first clock signal to the first module,
- determining by the first module, a (first) time difference value between the first clock signal and the at least one second clock signal, which time difference value is essentially due to the transmission time of the first and the at least one second clock signal between the first, and the at least one second module,
- transmitting by the first module, an item of information about the (first) time difference value to the at least one second module and
- adjusting the clock generator of the at least one second module on the basis of the information about the (first) time difference value.

2. A method according to Claim 1, wherein the (first) time difference value is halved to adjust the clock generator of the at least one second module.

3. A method according to Claim 1, wherein the at least one second module determines a second time difference value from the first and the second clock

signal and wherein the at least one second module transmits an item of information about the second time difference value to the first module,.

4. A method according to Claim 1, wherein the first module, transmits the first clock signal generated by its clock generator to the at least one second module at predetermined instants in time, in particular cyclically.

5. A method according to Claim 1, wherein the first module, retransmits the first clock signal generated by its clock generator to the at least one second module at predetermined time intervals, wherein the at least one second module determines a second time difference value from the first and the second clock signal and wherein the at least one second module transmits the respective second time difference value to the first module, and/or, if the respective second time difference value deviates from a predetermined value, it adjusts its clock generator on the basis of the respective second time difference value .

6. A method according to Claim 1, wherein the at least one second module retransmits the second clock signal generated by its clock generator to the first module, at predetermined time intervals, wherein the first module, determines a first time difference value between the first clock signal and the respective second clock signal received, wherein, if the respective first time difference deviates from a predetermined value, the first module, transmits an item of information about the respective first time difference value to the at least one second module and wherein the at least one second module adjusts its clock generator on the basis of the information about the respective first time difference value.

7. A (first) module having a first clock generator for synchronization with at least one second module having a second clock generator, comprising

- transmitting means for transmitting a first clock signal generated by the first clock generator to the at least one second module
- receiving means for receiving at least one second clock signal generated by the respective second clock generator and synchronized with the first clock signal and transmitted by the at least one second module, and
- generating means for forming a (first) time difference value between the first clock signal and the at least one second clock signal, which time difference value is essentially due to the transmission time of the first and of the at least one second clock signal between the first, and the at least one second module,

and wherein the transmitting means are designed for sending an item of information about the (first) time difference value to the at least one second module.

8. A (second) module having a clock generator for synchronization with at least one first module, comprising

- receiving means for receiving a first clock signal sent by the first module,
- synchronizing means for synchronizing its clock generator on the basis of the first clock signal and
- transmitting means for sending a second clock signal synchronized with the first clock signal to the first module,

wherein the receiving means are designed for receiving an item of information sent by the first module about a (first) time difference value formed from the first clock signal and the second clock signal, which time difference value is essentially due to the transmission time of the first and of the at least one second clock signal between the first, and the at least one second module, and wherein the synchronizing means are designed for adjusting the clock generator on the basis of the information about the (first) time difference value.

9. A master program module for a (first) module having a first clock generator for synchronization with at least one second module having a second clock generator, wherein the master program module contains a program code that can be run by a control means of the first module, the master program module further comprising

- transmitting means for sending a first clock signal generated by the first clock generator to the at least one second module,
- receiving means for receiving at least one second clock signal generated by the second clock generator that is synchronized with the first clock signal and sent by the at least one second module, and
- generating means for forming a (first) time difference value between first clock signal and the at least one second clock signal, which time difference value is essentially due to the transmission time of the first and of the at least one second clock generator between the first, and the at least one second module,

wherein the transmitting means are designed for sending an item of information about the (first) time difference value to the at least one second module.

10. A slave program module for a (second) module having a clock generator for synchronization with at least one first module, wherein the slave program module contains a program code that can be run by a control means of the second module, the slave program module further comprising

- receiving means for receiving a first clock signal sent by the first module,
- synchronizing means for synchronizing the clock generator on the basis of the first clock signal,
- transmitting means for sending a second clock signal synchronized with the first clock signal to the first module,

wherein the receiving means are designed to receive an item of information transmitted by the first module about a (first) time difference value formed from

the first clock signal and the second clock signal, which time difference value is essentially due to the transmission time of the first and of the at least one second clock signal between the first, and the at least one second module, and wherein the synchronizing means are designed to adjust the clock generator on the basis of the information about the (first) time difference value.

11. A device, in particular telecommunication device, containing at least one first and at least one second module, each having a clock generator, wherein the at least one first module comprises

- transmitting means for transmitting a first clock signal generated by the first clock generator to the at least one second module.
- receiving means for receiving at least one second clock signal generated by the respective second clock generator and synchronized with the first clock signal and transmitted by the at least one second module, and
- generating means for forming a (first) time difference value between the first clock signal and the at least one second clock signal, which time difference value is essentially due to the transmission time of the first and of the at least one second clock signal between the first and the at least one second module,

wherein the transmitting means are designed for sending an item of information about the (first) time difference value to the at least one second module and wherein the at least one second module comprises

- receiving means for receiving a first clock signal sent by the first module,
- synchronizing means for synchronizing its clock generator on the basis of the first clock signal, and
- transmitting means for sending a second clock signal synchronized with the first clock signal to the first module,

wherein the receiving means are designed for receiving an item of information sent by the first module about a (first) time difference value formed from the first

clock signal and the second clock signal, which time difference value is essentially due to the transmission time of the first and of the at least one second clock signal between the first and the at least one second module, and wherein the synchronizing means are designed for adjusting the clock generator on the basis of the information about the (first) time difference value.

12
~~11.~~ A memory means, in particular computer-readable diskette, on which a master program module according to Claim 9 and/or a slave program module according to Claim 10 are/is stored.